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Farmers Try DDT For Flies!

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FLIES CAN BE controlled cheaply and effectively by DDT properly used.

Farmers in Iowa and other states have given it an experimental trial on livestock, in their barns, in other outbuildings and have okayed it as an efficient fly-fighting weapon.

When the war in Europe ended, more DDT was made available for widespread experimental work. Out of that experimental work has come high promise for DDT, not as a cure-all against flies, but as another efficient means of reducing flies—the Iowa farmer's most expensive luxury.

The DDT in the experimental trials did a good job of killing flies, bedbugs, wasps, mosquitoes and fleas. And it offers further dividends in controlling lice on cattle and horses.

How to Use DDT

Out of that experimental work have been formulated these recommendations as to how to best use DDT against flies on the farm next spring:

1. Spray the inside of all outbuildings, April 1 and July 1, with 5 percent DDT. Use either the 5 percent solution in oil as it comes, or mix soft water with either the 25 percent oil concentrate or the 50 percent spray powder. Apply 1 gallon of 5 percent spray to each 1,000 square feet of surface. Spray walls, ceilings, light cords, stanchions and floors, if fleas are present.

2. Spray compost heaps, straw piles and other decaying vegetable matter lightly every 2 weeks, or scatter this material in the field. The stable fly breeds in this type of decaying material.

3. Spray large herds of cattle with 0.2 percent to 0.5 percent DDT in water every 2 to 3 weeks throughout the fly season (April 15 until frost). DO NOT USE OIL SOLUTION ON LIVESTOCK. Dust small herds with 10 percent DDT powder every 2 to 3 weeks.

4. Put 1 tablespoonful of 10 percent DDT powder in sulfur into each nest in the laying house.

5. Continue to use all other recommended fly control practices.

   a. Spread manure twice a week or treat with 1 ounce of borax per 8 bushels of manure when removed from the barn.

   b. Treat privy vaults with DDT or chlorinated lime or both.

   c. Keep the house, dairy barn and milk house well screened.

   d. Use fly traps near fly breeding places.

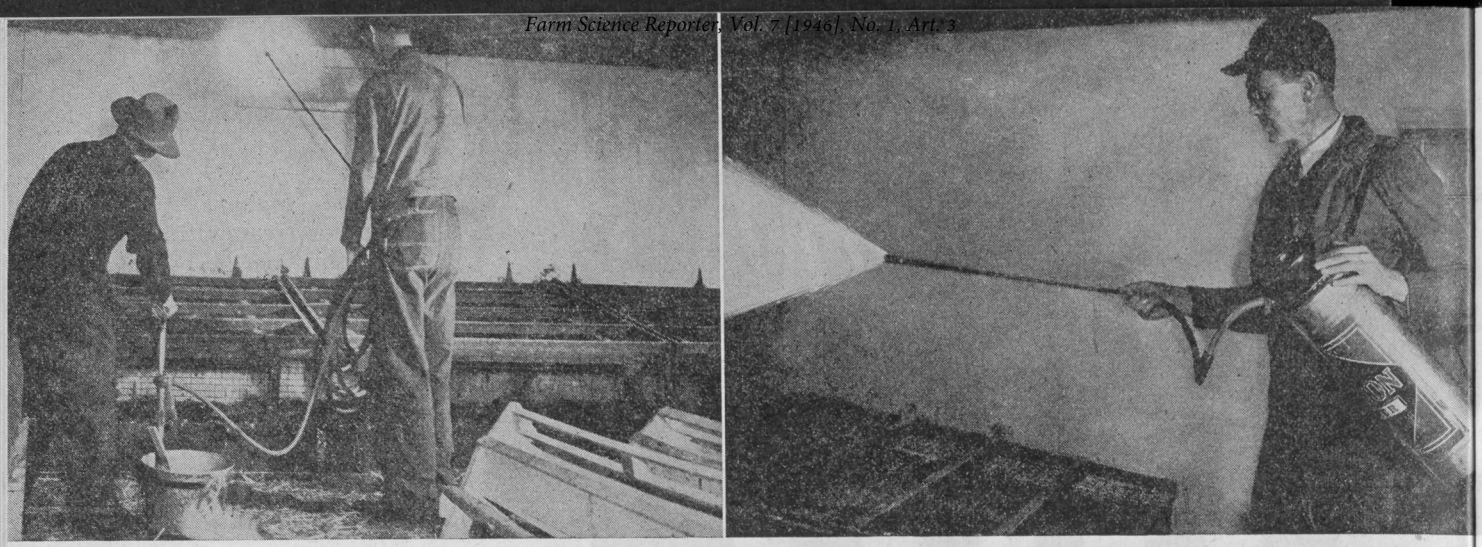
First general experimental work with DDT on farms in Iowa got under way in May, 1945. At that time a chemical company in New York wrote Iowa county extension directors, offering to supply a small quantity of their trade-named Carbola DDT for experimental application on a dairy farm in each county.

Not all counties applied for the material, and a few that applied did not receive it. But many counties did test it, and in November, after the fly season, a questionnaire was sent to every county asking for the opinions of the farmers who used the spray. We hoped that the answers might give us reasons for some of the dismal failures of DDT.

The questionnaire sent out after these tests with Carbola DDT revealed that the selected farmers were more or less in the dark as to how their DDT was to be applied. Many of them experimented cautiously—and some had excellent results.

The particular material sent to these men was a brownish powder with a faint creosote odor. Directions on the sack merely said to "mix 50 pounds of Carbola DDT with 15 gallons of water and spray or paint it on the inside walls of the barn." Recent inquiry indicates that this company uses "a minimum of 2 percent DDT. . . " We still don't know the concentration of DDT applied to barn walls by these farmers in this series of tests.

We felt that definite instructions as to the kind of water to be used in the spray, prepara-



Two methods of applying DDT with small sprayers to poultry house walls.

tion of surface, quantity per 1,000 square feet and cautions as to use of DDT should have been plainly printed on the container. All state and federal recommendations specify the actual percentage of DDT which must be used against different insects to obtain the desired results. If the amount of DDT in the concentrate is not given, the material cannot be used with real safety.

Most Farmers Satisfied

Not all counties used this particular product in tests during 1945, nor did all counties answer the questionnaire. Not all the questions on the questionnaire were answered in every case, either. However, there are enough replies from all parts of the state to show the trend. More than two-thirds of the farmers who replied to our questions were very well satisfied with the results they obtained. Apparently even some of the men whose results were not good will try it again next summer.

The spray was applied to all sorts of surfaces, including bare boards, whitewash, paint, concrete and hollow tile. We were particularly interested in the results obtained on whitewashed walls, since laboratory tests show that the toxicity of DDT is sharply reduced by alkalis. The compositions of whitewash may vary considerably, of course, and may account for the results reported here.

Many of the farmers who had good luck with DDT applied it to whitewashed walls, and the U. S. Public Health Service reports that the longest time DDT has ever been effective was 7½ months on whitewashed walls. Public Health Service has done a great deal of work on wall surfaces. They found that bare boards and concrete absorbed quite a bit of spray, reducing the effective concentration of DDT on the surface. They feel that any covering which will seal the pores is of value in increasing the effectiveness of DDT applied later. They also suggest that on porous surfaces the spray be diluted with additional water and more spray be applied, perhaps 2 gallons per 1,000 square feet.

In the Iowa trials water of all degrees of hardness was used in mixing the spray. We are interested in this because DDT loses its toxicity when mixed with alkaline materials or when mixed with water containing metals. The questionnaires show that 11 farmers used hard or very hard water in mixing the spray.

Of all the farmers who reported on their use of DDT, only eight said that it was effective in killing flies for as short a period as 2 weeks or less. One or two of the eight with these rather poor results used medium hard or soft water in mixing the spray. On the other hand, several farmers who used hard to very hard well water in mixing the spray reported that it was effective in killing flies for 3 to 4 months. So while it is probably wise to use soft water, our tests show that it doesn't appear to be absolutely necessary.

Here's What It Killed

Now let's see what happens when we spray the inside of a barn with DDT. In most cases we kill flies—lots of flies. These flies don't die at once. The usual report was that flies came into the barn in the daytime but were killed during the night. This situation occurs because DDT is not repellent and does not warn the insects away. So they come into the barn, rest on the walls, and absorb enough DDT through their feet to kill them.

Do we kill anything else? Yes, the answers indicate that worms, bedbugs, black bugs, wasps, mosquitoes, moths and spiders are also killed. There may be several reasons for the disappearance of spiders from barns sprayed with DDT. As you know, spiders feed on other insects and would probably find little or no food in barns where DDT has been used. In that case, they would be forced to leave if they didn't want to starve to death.

DDT also affects other animals. One man had an open stock tank in the barn in which he had bullheads. The spray falling into the tank killed the fish. This agrees with findings of other groups since the U. S. Public Health Service has found that as little as 1 pound of DDT per acre of water surface will kill fish. Several farmers reported that there weren't as many sparrows or swallows around the barn after spraying with DDT. This also may be explained by the general reduction of insects on which these birds might feed. One

farmer reported that he found a number of dead mice in the barn shortly after he had applied DDT. However, the mice may have died from some other cause.

Does spraying the barn reduce the fly population on the whole farm? Many of the users say, "Yes." Several of the farmers who applied DDT well after the start of the fly season said, "We had fewer flies around the house after spraying than ever before." For really effective fly control, we suggest that all outbuildings be sprayed with DDT and that other fly control measures also be used.

DDT applied to barn walls apparently has no injurious effect on livestock. Farmers' comments were: "Beneficial," "Cattle and horses quieter and not irritated," and one man said, "Flies have always just covered the young pigs in the fall. I sprayed the inside of the hog house and flies didn't bother the pigs at all this fall."

The questionnaires indicate that more than 90 percent of the farmers who used DDT this last summer plan on using it in some form next summer. Many of them indicate that they want to try a different product or a different form. We are sure that DDT, which will be readily available next summer, will contain a statement of the percentage of each ingredient and directions for mixing and applying the material so that farmers won't have to guess about it.

Other States Report

Now let's look at the general picture as given by reports from other states. Nebraska ran some tests similar to those in Iowa and got about the same results. There was a general story of excellent fly control in most cases. Five percent DDT was used, either in oil solution or in water suspension, on walls, ceilings and floors of farm outbuildings.

The U. S. Public Health Service sprayed 385,000 houses in southern states for malaria mosquito control during the summer of 1945. No injurious effects were noted and in many cases there was a sharp reduction in flies as well as a total disappearance of mosquitoes.

Kansas, cooperating with the U. S. Bureau of Entomology, really put on a large scale demonstration of DDT. Some 6,000 cattle on 30 ranches were dipped, sprayed or dusted with DDT. Dips contained 0.1 percent DDT, sprays applied with a power sprayer contained 0.2 percent DDT, hand operated pressure sprayers or bucket pumps used 0.5 percent to 0.75 percent DDT and dust contained 10 percent DDT. About ⅓ gallon of spray or 2 to 3 tablespoonfuls of dust were applied to each animal.

The results of the Kansas tests were remarkable. In many cases there were 1,200 to 1,500 flies per head before spraying and only from 5 to 100 flies per head 16 days after spraying. During this 16-day period, the cattle were in pastures exposed to sun and to heavy rains. The difference in the behavior of sprayed cattle was very noticeable. Unsprayed cattle bunched up in the shade, while sprayed cattle scattered out over the pasture and fed. It appears as though spraying dairy and beef herds every 2 to 3 weeks will increase beef and milk production by 10 to 20 percent. In these tests sprayed herds of beef cattle on pasture gained from ½ to 1 pound a day more than unsprayed cattle on similar pasture. Differences in feedlot cattle were as striking.

DDT has also given excellent results in poultry houses. Five percent DDT either in oil solution or as a water suspension applied to walls, ceilings, floors and roosts has given quick and long lasting control of bedbugs. One tablespoonful of 10 percent DDT mixed with sulfur and placed in each nest controls chicken lice. DDT itself has little or no effect on poultry mites, but sulfur will control them.

So DDT does point the way to effective fly control on the farm. And the farmer who applies it in the spring will find that he isn't going to need expensive equipment to use the spray—another point in its favor. Equipment needed for applying DDT to walls and livestock is simple and usually available on every farm. A 3-gallon sprayer or a bucket pump is adequate. If a power sprayer is available the job of spraying can be done more quickly and with less work.

DDT Questionnaire

Date sprayed:
May 15-30 — 4; June 1-15 — 5; June 16-30 — 7; July 1-16 — 10; July 16-31 — 6; Aug. 1-15 — 4; Aug 16-31 — 2; Sept. 1-30. — 3

Number of times barn was sprayed:
Once—36 Twice—4 More than twice—1

Kind of surface:
Bare boards—24 Whitewash—11 Paint—3 Concrete—2 Hollow tile—1

Kind of water used:
Very hard—4 Hard—10 Medium hard—17 Soft—10

Length of time spray was effective:
Week or less — 4; 2 weeks — 4; 1 month — 2; 2 months — 2; 3 months — 19; 4 months — 7; 5 months — 2

Was a general reduction of flies noticed following spraying:
Yes—25 No—12 No comment—4

Were other insects killed:
Yes—17 (included worms, bedbugs, black bugs, wasps, flies, mites, mosquitoes, bugs and moths). No—6 No comment—18

Were spiders killed:
Yes—35 No comment—6

Did the spray affect birds or animals:
Yes—4 (one man reported it killed bullheads in his tank, three reported not as many sparrows and swallows around the barn—no dead ones found.) No—31

Was there any effect on livestock:
Yes—1 (quieter, less irritation.) No—36

Was the farmer satisfied:
Yes—30 No.—10 No comment—1

Will he use DDT next summer:
Yes—36 No—1 Undecided—3

In the same way?
(In barns and outbuildings) Yes—30 No—5 (too expensive)

On cattle as a spray?
Yes—17 No—5 Maybe—3